

Environmental Satellite Processing and Distribution System (ESPDS) Development Statement of Work Requirements Document

Draft Version 1.0

11 May 2009



U.S. Department of Commerce (DOC)
National Oceanic and Atmospheric Administration (NOAA)
National Environmental Satellite, Data, and Information Service (NESDIS)

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1.

2. INTRODUCTION

2.1 Overview

NOAA's operational environmental satellite program is developed, operated and maintained by the National Environment Satellite, Data and Information Service (NESDIS). From the new NOAA Satellite Operations Facility (NSOF) in Suitland, Maryland, NESDIS manages and operates NOAA's two environmental operational satellite programs—Polar-orbiting Operational Environmental Satellites (POES) and Geostationary Operational Environmental Satellites (GOES), in addition to acquiring numerous non-NOAA and international satellite data required for operational mission support.

POES and GOES are in their fourth decade of continuous operational weather and climate monitoring, and are mission critical programs for NOAA's strategic goals of weather warning and forecasting, climate monitoring and forecasting, coastal and ocean environmental stewardship, and monitoring the space environment and environmental hazards such as volcanic ash, drought and wildfires. The POES and GOES satellites provide operational global coverage on a 24x7 real time and near real time basis. POES and GOES data and products are used by all NOAA line agencies, National Aeronautics and Space Administration (NASA), Department of Interior (DOI)/U.S. Geological Survey (USGS), Department of Defense (DoD), Federal Aviation Administration (FAA), Department of Homeland Security, emergency first responders, universities, international partners, private industry, and many others.

Four NESDIS line offices are responsible for NOAA satellite management and operations: the Office of Systems Operations (OSO), the Office of Systems Development (OSD), the Office of Satellite Data Processing and Distribution (OSDPD), and Center for Satellite Applications and Research (STAR). OSO with its two spacecraft acquisition stations in Wallops Island, VA, and Fairbanks, AK, is responsible for satellite data acquisition, command and control, and health and safety. OSD is responsible for the development of POES and GOES spacecraft, launch services and ground systems, and development of future satellite systems and ground systems. Operational ingest, product generation and product distribution of POES, GOES and non-NOAA satellite data and products is the responsibility of OSDPD. NESDIS has a reorganization pending and OSDPD will be merged into OSO. For the purpose of this acquisition, OSDPD remains as it is currently defined. STAR provides the science and research for developing new and enhanced land, atmosphere, ocean and climate applications and products that will be transferred to routine operations in OSDPD. This acquisition is being managed by NESDIS OSD, with support from the line offices described above.

This Statement of Work (SOW) specifies the requirements to plan, acquire, develop, implement, integrate and test new or enhanced ground satellite data processing functions such as ingest, product generation and product distribution within the existing NESDIS OSDPD operational processing center called the Environmental Satellite Processing Center (ESPC), or mission management capabilities within satellite operations. Today, the ESPC is a combined operation in the NSOF and an off-site back-up facility of two long-term, legacy systems called SATEPS (Satellite Environmental Processing System) and Central Environmental Satellite Computer System (CEMSCS). SATEPS processes primarily GOES data; CEMSCS, POES data. Both

systems use non-NOAA satellite data and ancillary data in their production processing, and both are at or near capacity and are architecturally not feasible of being upgraded to accommodate ground processing systems for future programs, primarily NPP/NPPOES and GOES-R.

This development acquisition is labeled ESPDS for Environmental Satellite Processing and Distribution System. The purpose of this acquisition is to acquire the necessary systems engineering organization, project management, technical management, business management and systems engineering expertise to develop integrated IT solutions for new and enhanced ESPC functionality. The driver for developing new functionality is the National Polar-orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP), NPOESS, and GOES R-series (GOES-R).

Figure 1 is a notional daily data volume analysis for the ESPC. Shown are current and future operational satellites that are processed, or planned to be processed, by the ESPC. Data volume was estimated for ingest and product processing functions only. Other GEO satellites include Meteosat MSG, MT-SAT, Insat; other LEOs include, NASA Terra, Aqua and Aura, Quikscat, COSMIC, RADARSAT. The satellites, data and “fly-out” timelines shown change frequently and are listed primarily to show the anticipated scope and growth of the ESPC.

ESPC DAILY DATA VOLUME				All values are Gigabytes (GB) per day							S/C Storage	
Calendar Year												
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
GOES-10												
GOES-11	23	23	23									
GOES-12	23											
GOES-13		23	23	23	23	23						
GOES-O				23	23	23	23	23				
GOES-P							23	23	23	23	23	
GOES-R									1128	1128	1128	1128
GOES-S												1128
NOAA-18	50											
NOAA-19	50	50	50	50								
METOP-A	75	75	75									
METOP-B			75	75	75	75	75					
METOP-C							75	75	75	75	75	
METOP-D											75	75
Jason-2	8	8	8	8	8							
Jason-3+					8	8	8	8	8	8	8	8
DMSP-F17	50	50										
DMSP-F18	50	50	50	50								
DMSP-F19			50	50	50	50						
DMSP-F20							50	50	50	50		
NPP			8000	8000	8000	8000	8000	8000				
NPOESS C1					16000	16000	16000	16000	16000	16000	16000	16000
NPOESS C2								16000	16000	16000	16000	16000
NPOESS C3												
Other GEO	143	143	143	143	143	143	143	143	143	143	143	143
Other LEO	517	517	517	517	517	517	517	517	517	517	517	517
Total GB/Day	988	939	9014	8939	24848	24839	24914	40839	33944	33944	33969	34999

Figure 1. ESPC Daily Data Volume for Ingest and Product Processing

2.2 Acquisition Objectives

The acquisition objective is to evolve the ESPC from its current “stove pipe” systems into an integrated enterprise system capable of meeting technical and performance requirements of future and current satellite ground processing systems. It is also the intent of this acquisition to evolve current legacy systems into an integrated enterprise system. The contractor’s enterprise solutions must be flexible, adaptable and expandable to meet the requirements of newly developed or enhanced ESPC functionality. NOAA expects a cost-effective, agile enterprise architecture to facilitate NOAA’s ability to integrate new functionality over time based on program requirements and availability of future funding.

Figure 2 shows a high-level notional architecture for ESPDS, highlighting the major functional components: Ingest, Product Processing, Product Distribution, and Infrastructure Support; note that applications development and a test environment are shown integrated with the product processing function. Not shown in Figure 2 is the Critical Infrastructure Protection (CIP) back-up requirement now being implemented for ESPC at Wallops Island, VA.

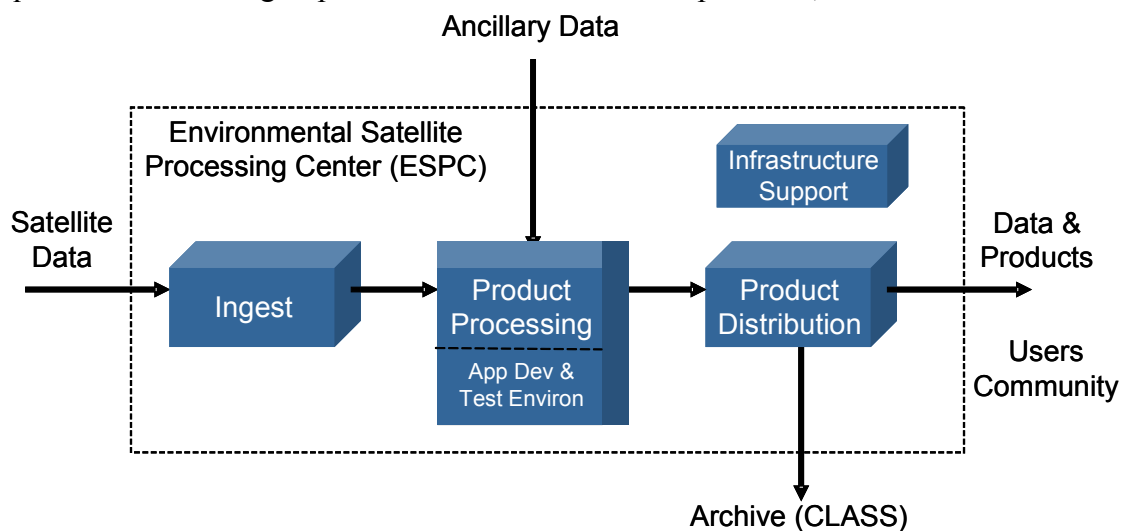


Figure 2. ESPDS Notional Architecture Components

2.3 Acquisition Structure

The following SOW sections specify systems engineering processes, methodologies and support requirements for establishing and performing ESPDS project organization, project management, technical management, and business management tasks. The requirements define how the contractor will analyze, design, develop, fabricate, assemble, integrate, verify, validate, deliver, transition and document new or enhanced functionality. The SOW is also referred to as an “umbrella” SOW in that it will support all new or enhanced functionality developed and implemented in the ESPC enterprise. New or enhanced functionality will be incrementally awarded under this contract by the issuance of specific Work Assignments over the period of performance of the contract.

2.4 Work Assignments

Work Assignments (WA) will vary from detailed requirements for new or enhanced functionality in the ESPC to requests for studies and analysis. Was for specific system or capability deliveries will be similar to Task Orders in that they will have specific, detailed requirements and specifications with firm milestone schedules. NOAA requires that all IT-related WA be developed and implemented as integrated IT solutions within an approved enterprise architecture baseline. The ESPC will evolve over time through issuance and execution of Work Assignments, starting with NPOESS Data Exploitation (NDE) and GOES-R.

This SOW is issued with two Work Assignments. Initial tasking will focus on two new satellite programs, NPP/NPOESS and GOES-R. Both of these programs require systems engineering development to support NOAA POES and GOES program requirements, continuity and strategic objectives. The NDE Work Assignment will develop and implement new ingest, product production, and distribution subsystems for NPP and NPOESS data that will eventually replace the current POES-series of satellites. NDE development is currently in progress and continued engineering support will be required through test verification, validation, delivery, and transition to operations. NPP has a potential 2011 launch date.

The GOES-R Ground Segment Project Office has defined a requirement for GOES-R data access and distribution. The GOES-R Access Services (GAS) Work Assignment defines requirements and specification for this functionality with a current GAS delivery date of September 2012.

2.5 Transition to Operations

Work Assignments issued under this contract are for the development, implementation, integration, and testing phases. Once accepted by the Government, either through new builds, releases, versions or some other form of OSD acceptance criteria, the new or enhanced functionality will be transitioned to OSDPD for operations, maintenance, and sustaining engineering. This transition will follow a Transition to Operations Plan developed jointly by the cognizant Project Office, OSD, OSDPD and the contractor, in addition to the requirements specified in the SOW, Section 5, Transition to Operations.

2.6 Future Work Assignments

Listed below are future ESPDS Work Assignments that may, or may not, be issued pending requirements development and funding. The list is not complete and does not imply that the Government will issue a Work Assignment under the ESPDS contract. It is shown only to show the scope of potential future tasks.

- CIP development and implementation
- ESPC Legacy data distribution subsystem integration into the ESPC enterprise
- GOES-R Ancillary Data Relay Subsystem (required for GOES-R product processing)
- ESPC Ingestor consolidation
- GOES-R Data Exploitation – similar to NDE

2.7 Terminology

The terms “Government” and “Government personnel” refer to Federal Government employees.

The term “Government representatives” means Federal Government employees and Government support contractors.

The term “Delivery” means release of studies, capabilities, or systems (hardware, software) to the Government for acceptance.

The term “Work Assignment Package” refers to the document set provided to the contractor that defines the desired tasking. This could include a simple request for a study or technical requirements, a SOW, contract deliverables, and a schedule.

The term “Operational Acceptance” refers to agreement by the Operations and Maintenance organization to operate and maintain the delivered systems or capabilities.

3.

DOCUMENTS

3.1 Order of Precedence

Any inconsistency in documents, exhibits, and attachments **shall** be resolved by giving precedence in the following order:

- Statement of Work
- System Requirements Document
- Interface Control Documents
- Work Assignments
- Other exhibits and attachments included in Section J
- Applicable Documents
- Reference Documents

In the event of any unresolved conflict, the contractor **shall** request conflict resolution by the Contracting Officer.

3.2 Applicable and Reference Documents

The Applicable and Reference Documents List is supplied as a separate document, listing each of the documents and information sources that are cited within ESPDS requirements documents. Applicable documents typically are Government-prepared and controlled documents and industry standards documents. Reference documents are intended to amplify or clarify the information or requirements presented in a document.

The applicable documents cited within this SOW form a part of the SOW as specified. In the event of conflict between different applicable documents, the precedence shall be determined as follows.

The requirements of the NOAA documents shall take precedence over the requirements of other documents.

The requirements of Government documents shall take precedence over Contractor documents and industry standards.

4.

PROJECT MANAGEMENT

The contractor **shall** provide all management and engineering services, personnel, materials, and equipment necessary to design, analyze, validate, develop, integrate, test, evaluate, verify, deliver, transition, document, and support enhancement of the ESPC and its interfaces.

The contractor **shall** put in place an ESPDS management structure responsible for overall project control, to ensure that all requirements of this contract and all attachments are accomplished within cost and on schedule.

The contractor **shall** provide a Project Management Plan that defines the project's objectives; technical approach; cost, schedule, risks, implementation approach; and the environment within which the project operates [CDRL PM-01].

The contractor **shall** document all project management functions necessary to execute the total effort required by this contract in the ESPDS Integrated Master Plan (IMP) [CDRL PM-02].

The contractor **shall** perform all project management functions necessary to execute the total effort required by this contract, as outlined in the ESPDS IMP.

The contractor **shall** designate an ESPDS Project Manager with sufficient corporate authority to ensure that the ESPDS project cost, schedule and technical requirements are fully met.

The contractor **shall** provide a Handover Approach Plan to support transfer of in-process development activities and duties from the legacy ESPC O&M contractor [CDRL PM-3].

The contractor **shall** provide a Handover Recommendation Plan to support transfer of in-process development activities and duties to the subsequent Development contractor [CDRL PM-4].

4.1 Business Management

Within one month after task order award the contractor **shall** prepare and conduct a Post-Award Conference covering a line-by-line review of the ESPDS schedule and clauses, SOW, Requirement Specifications, Contract Deliverable Requirement List (CDRL), and initial Work Assignments.

The contractor **shall** provide all the information technology resources to perform ESPDS work required by this contract unless existing resources are available when needed. The Government will have responsibility for authorizing access to existing resources.

The contractor **shall** establish a joint contractor/Government representative working group to define acceptable requirements and methods for ESPDS acquisition support data systems. These systems include access via the Internet; provisions for protected electronic mail; and transmission of all contractor, subcontractor, vendor proprietary data, ITAR/EAR Controlled information, and Sensitive But Unclassified information between program elements and facilities.

The contractor **shall** establish and maintain a documentation system capable of supporting the transfer of all ESPDS data and documentation, including schematics, block diagrams, drawings, analyses, plans, procedures, and reports, to the Government.

The contractor **shall** establish and maintain a secure Internet-based information exchange and document management system that complies with the security requirements for a Major Application rated as High Impact as outlined in NIST-SP-800-53.

The contractor **shall** ensure that Internet-based information is accessible with FIPS validated Crypto by personnel designated by the Government.

The contractor **shall** be registered with the Software Engineering Institute (SEI) at Capability Maturity Model Integration (CMMI) Maturity Level 3 (or higher)

The contractor **shall** develop and maintain an ESPDS Action Item Database [CDRL PM-5] for collecting and reporting all Action Items and Requests for Action from reviews, meetings, and telecons, and other interactions with Government representatives.

The contractor **shall** provide all of the administrative support for all reviews and joint meetings at the contractor's facility.

The contractor **shall** provide all ESPDS data and documentation deliverables in accordance with the ESPDS Contract Deliverable Requirements List (Document #XXXX).

The contractor **shall** provide tailored ESPDS CDRLs in accordance with the SOWs of the individual Work Assignments.

The contractor **shall** hold all ESPDS reviews and meetings at their facility unless otherwise directed by the Government

For all meetings with the Government representatives and Technical Interchange Meetings, the contractor **shall** submit Meeting Minutes [CDRL PM-06].

The contractor **shall** provide a Task Order Closure Plan [CDRL PM-07] to support project administration close out.

4.1.1 Schedules

The contractor **shall** ensure that the ESPDS Integrated Master Schedule (IMS) [CDRL PM-08] is consistent with the events and milestones described in the ESPDS Integrated Master Plan [CDRL PM-02].

The contractor **shall** define and schedule the ESPDS tasks and activities that will be completed over the task order period of performance.

The contractor **shall** use the ESPDS IMS [CDRL PM-08] to status, report, and change the ESPDS project schedule.

4.1.2 Project Management Status

The contractor **shall** provide project management status reports to the Government [CDRL PM-09].

The contractor **shall** conduct bi-weekly working group teleconferences with the Government to review and discuss each ESPDS Delivery and the associated Work Assignment technical information, action items and issues.

The contractor **shall** conduct monthly ESPDS Project Management Status Reviews (PMSRs) and generate PMSR data packages [CDRL PM-10] for the purpose of reviewing the technical, risk, schedule, and cost status of each ESPDS Delivery and Work Assignment content.

The first ESPDS PMSR **shall** be held sixty (60) days after task order award.

4.1.3 Contract Administration

The contractor **shall** provide the contractual and cost management efforts necessary to provide proposals for, execute, and close out each Work Assignment on the ESPDS Task Order.

The contractor **shall** structure all plans, schedules, accounts, loading, and Work Assignments according to the ESPDS Work Breakdown Structure (WBS).

The contractor **shall** prepare and conduct an initial Contract Integrated Baseline Review (IBR) with an IBR Data Package [CDRL PM-11] after the Post-Award Conference.

The contractor **shall** prepare and conduct delta Work Assignment IBRs within 60 days after Authorization To Proceed (ATP), with updates as required to define, document, and update the contract performance measurement baseline.

Each IBR **shall** include a review of the WBS and its suitability for ESPDS cost accounting and reporting.

Each IBR **shall** include an EVMS plan [CDRL PM-12], time-phased expenditure plan, resource loading, cost accounts, and plan for Work Assignments integration into the ESPDS Integrated Master Plan and ESPDS Integrated Master Schedule.

The initial Task Order IBR **shall** include a review of the contractor's earned value assessment and reporting systems to assess system compliance with applicable standards and, in particular, the means by which actual expenditures of time and effort in the performance of tasks identified in the WBS are used to generate Earned Value Measurements and Reports.

The contractor **shall** manage all ESPDS project finances and provide Contract Performance Reports [CDRL PM-13] to the Government.

The contractor **shall** report funding status and projected requirements to the Government in an ESPDS Contract Funds Status Report [CDRL FM-01].

The contractor **shall** collect and deliver cost and technical data to support ESPDS Cost Analysis Data Summary Report [CDRL FM-02] and estimation activities.

The contractor **shall** prepare, submit, and implement an Earned Value Management System (EVMS) in accordance with the ESPDS EVMS Plan [CDRL PM-12] that complies with the ANSI/EIA-748-B Standard.

4.1.4 Subcontract Management

The contractor **shall** be responsible for the performance, including the technical, cost, and schedule performance, of all subcontractors.

The contractor **shall** provide technical and management oversight and status reporting for all subcontract activities in accordance with the Subcontract Management section of the ESPDS Project Management Plan [CDRL PM-01].

The contractor **shall** ensure requirements from this SOW, the ESPDS and specific Work Assignment Package, the ESPDS Contract Deliverables Requirements List (CDRL), and applicable documents are flowed down to the subcontractors.

4.1.5 Property

The contractor **shall** develop and use an ESPDS Personal Property Management Plan [CDRL PM-14] to identify and account for Government property in the possession of the contractor from the time the property is acquired until it is formally delivered to the Government.

The contractor **shall** provide an Annual ESPDS Personal Property Inventory [CDRL TO-15] to the Government in an electronic format that can be uploaded into the Governments Personal Property Database System.

4.1.6 Licensing

The contractor **shall** transfer all software licenses, software support contracts, hardware warranties, and service agreements to the Government at operational acceptance.

The contractor **shall** provide all licenses required to ensure the lifecycle operation and maintenance of the ESPDS for two year after transition to operations.

The contractor **shall** describe ESPDS hardware and software license planning, support, and transition [CDRLs SW-01, HW-02].

4.2 Risk Management

The contractor **shall** document the ESPDS risk management plan and process in the ESPDS Project Management Plan [CDRL PM-01].

The contractor **shall** establish, implement and maintain a risk management system for identifying, analyzing, planning, tracking, controlling, and communicating ESPDS risks by WBS element.

The contractor **shall** provide access to the ESPDS risk data repository to Government representatives.

The contractor **shall** develop, maintain, and deliver an ESPDS Risk List [CDRL RM-01] throughout the contract period of performance, listing all ESPDS risks by WBS element along with the probability, impact, mitigation plan, and status for each.

For items on the Risk List, the contractor **shall** retain due date, current status information, and justification for final closure, date closed, and provisions for Government concurrence.

The contractor **shall**, prior to accepting a “red” risk, request and secure Government concurrence and provide supporting rationale that all reasonable mitigation options (within cost, schedule, and technical constraints) have been instituted.

4.3 Configuration Management

The contractor **shall** implement an ESPDS configuration management system and process that is consistent with NOAA/OSD3-1999-0035R0UD, the NOAA/NESDIS Document Control Procedure, the NESDIS Satellite Product and Services Review Board (SPSRB) documentation

standards, and the Environmental Satellite Processing Center (ESPC) Configuration Management Plan and Procedures (ESPC-CM1301-05-CT-0044).

The contractor **shall** include an ESPDS Configuration Management Plan as part of the ESPDS Project Management Plan [CDRL PM-01].

The contractor **shall** develop and maintain an ESPDS Document Tree [CDRL CM-01] that incorporates required SPSRB documents, the ESPDS Drawing Tree [CDRL CM-02], and the ESPDS Specification Tree [CDRL CM-03].

The contractor Configuration Control Board (CCB) **shall** include Government participation in the review and approval of changes to ESPDS hardware and software and ESPDS controlled documentation.

The contractor **shall** submit ESPDS CCB documentation [CDRL CM-04] to the Government for review one week prior to CCB discussion and action.

The contractor **shall** generate, accept, disposition, and maintain Configuration Change Requests [CDRL CM-05] for all requested modifications to ESPDS documents and drawings under configuration management.

The contractor **shall** submit Class I changes [as defined in CDRL CM-05] to the Government and obtain approval prior to implementation of the change.

The contractor **shall** submit Class II changes [as defined in CDRL CM-05] to the Government for concurrence with the contractor classification.

If the Government determines that a Class II classification is incorrect, the contractor **shall** resubmit the change as a Class I change.

The contractor **shall** support the Government CCB process, including providing technical inputs regarding ESPDS-related actions coming before the Government Engineering Review Boards and CCBs.

The contractor **shall** document any ESPDS requirement waiver and deviation requests and submit them to the Government for approval.

The contractor **shall** submit to the Government an ESPDS Configuration Item Identification List [CDRL CM-06] and provide updates when configuration items change.

The contractor **shall** implement a Software Configuration Management system that provides baseline management and control of software requirements, design, source code, compiler, data, and documentation.

The contractor **shall** employ a source code version control tool to check in/check out current or previous versions of a source file.

The contractor **shall** document, create, and maintain a Software Configuration Control Board that includes Government representation for the purpose of classifying, managing, assessing, and controlling all changes.

The contractor **shall** plan and implement a transition of ESPDS documentation and software configuration management processes and activities from using contractor tool(s) to use of a Government system to be completed before the ESPDS Delivery becomes operational.

5.

SYSTEMS ENGINEERING & INTEGRATION

5.1 Systems Engineering

The contractor **shall** develop and deliver an ESPDS Systems Engineering Management Plan [CDRL SE-01].

The contractor **shall** perform all ESPDS systems engineering and integration functions that are necessary for the requirements development, definition, design, integration, and testing of each ESPDS Delivery.

The contractor **shall** designate an ESPDS chief systems engineer, who will be included in the Key Personnel clause of the contract, to conduct and coordinate day-to-day systems engineering activities, oversee implementation of the Systems Engineering Management Plan [CDRL SE-01], and act as the technical interface with the Government.

The contractor **shall** support or conduct Technical Interchange Meetings (TIMs) requested by the Government for the purpose of discussing and resolving items of interest.

If the contractor conducts TIMs with subcontractors for critical hardware or software end-items or higher-level subcontractor-supplied items, the contractor **shall** provide the Government at least ten (10) working days advanced notification of each TIM in order to facilitate Government representatives' attendance.

5.1.1 Government Coordination

The contractor **shall** work with the NPOESS and GOES-R Project Offices and Ground Segment vendors and the ESPDS O&M contractor, as directed by the Government, to support transition to operations.

The contractor **shall** work with STAR, through the Government, to support product transition from research to operations.

The contractor **shall** work with STAR, through the Government, to identify and propose solutions for any science impacts to operational systems due to ESPDS design, development, and implementation.

The contractor **shall** support Government-run pre-launch validation and post-launch test planning, preparation, execution, and analysis as directed by the Government.

The Government will form Integrated Project Teams (IPTs) and Working Groups, consisting of Government representatives and stakeholders, to provide analysis and recommendations on direction for ESPDS technical focus areas.

The contractor **shall** provide technical support and resources, as directed by the Government, to participate in Government and Government-vendor IPTs, technical interchange meetings, and working groups.

The contractor **shall** provide access for Government representatives, STAR, the NPOESS and GOES-R Ground Segment vendors, the ESPDS O&M contractor, and ESPC stakeholders, as authorized by the Government Project Office, to attend reviews and tests and participate in technical interchange meetings.

5.1.2 Architecture

The contractor **shall** work with the ESPDS Operations and Maintenance (O&M) contractor, through the Government, to evaluate, verify, and document the baseline 'As Is' ESPC architecture, including ESPC hardware and software configurations and system performance [CDRL SE-02].

The contractor **shall** design, develop, and deliver a series of ordered, disciplined target 'To Be' enterprise architecture solutions for ESPC operations that meet system requirements, incorporates evolution of the legacy system, meets the schedule needs of the individual Work Assignments, and incorporates the target framework, including the NOAA-NESDIS Technical Reference Model (TRM) [CDRL SE-03].

The contractor **shall** develop operations concepts for each 'To Be' enterprise architecture solutions, organized by the major functional components; Ingest, Product Processing, Product Distribution, and Infrastructure Support [CDRL SE-04].

5.1.3 Requirements and Specifications

The contractor **shall** perform systems analyses and systems engineering in accordance with the SEMP [CDRL SE-01] to derive lower-level ESPDS and Work Assignment requirements specifications and design specifications, including interface requirements.

The contractor **shall** document and maintain the allocation and traceability of Government ESPDS requirements to lower-level specifications and Work Assignment requirements to ESPDS requirements, including identification of derived requirements.

The contractor **shall** prepare and deliver all ESPDS and Work Assignment Requirements Specifications [CDRL SE-05].

The contractor **shall** evaluate and validate the NDE, GOES-R, and legacy ESPC interface requirements/control documents.

The contractor **shall** develop Interface Requirements Documents (IRDs) when subsystems or capabilities cross any of the four major components of the ESPDS framework: Ingest, Product Generation, Product Distribution, and Infrastructure [CDRL SE-06].

The contractor **shall** develop ICDs when subsystems or capabilities cross any of the four major components of the ESPDS framework: Ingest, Product Generation, Product Distribution, and Infrastructure [CDRL SE-07].

The contractor **shall** develop Interface Control Documents (ICD) for all ESPDS external interfaces without ICDs [CDRL SE-07].

The contractor **shall** develop, document, justify and provide to the Government all recommended modifications to the facility and physical interface requirements, including but not limited to: floor space, primary and backup power, cooling, fire protection, plug/connector types, number and types of network connections, network address allocations.

The contractor **shall** implement and maintain a Requirements Management System that enables the identification, organization, detailing, control, export, and linking of ESPDS requirements.

The contractor **shall** use the Telelogic DOORS® requirements management tool to capture, link, trace, analyze, and manage changes to ESPDS requirements documentation.

The contractor **shall** incorporate DOORS modules provided by the Government into their DOORS database.

The contractor **shall** provide electronic access to the requirements management tool and requirements data for Government-designated personnel.

The contractor **shall** verify that lower-level requirements are fully traceable to higher-level requirements.

The contractor **shall** develop and maintain quality assurance requirements.

The contractor **shall** allocate Reliability, Maintainability, and Availability (RMA) requirements to the architecture component level as appropriate. Requirements consistent with the allocations will be imposed on any subcontractors, suppliers and commercial off-the-shelf (COTS) vendors whenever appropriate.

The contractor **shall** trace all requirements to specific verification methods, plans and procedures.

The contractor **shall** track and log all changes to the baseline requirements.

5.1.4 Analysis and Trade Studies

The contractor **shall** perform analyses and trade studies, including associated risk assessment and life cycle cost implications, to define and develop ESPDS designs.

The contractor **shall** perform analyses and trade studies, as captured in Work Assignments, to support the O&M contractor in resolving operational anomalies and performance concerns.

The contractor **shall** perform analyses and trade studies, as captured in Work Assignments, to support impact of new missions on the ESPC ingest, product generation, product distribution, and infrastructure support.

5.2 Integration and Test

The contractor **shall** submit and implement an ESPDS Integration and Test Plan [CDRL IT-01] addressing all ESPDS Delivery activities.

The contractor **shall** work with the Government and the ESPDS O&M contractor to integrate, test, and transition to operations all ESPDS Deliveries.

The contractor **shall** deliver and implement an ESPDS Performance Verification Plan [CDRL SE-08] documenting the overall approach, activities, and plans to jointly verify and validate all ESPDS and Work Application functional, performance, and interface requirements.

The contractor's Performance Verification Plan **shall** include a Performance Verification Matrix of all functional, performance, interface, and assurance requirements and the content defined by CDRL SE-08.

The contractor **shall** ensure that the ESPDS I&T Plan and ESPDS Performance Verification Plan are consistent and provide a complete set of activities necessary to ensure ESPDS Delivery and Work Assignment capability readiness for testing and operations.

The contractor **shall** develop and implement Detailed Test Plans and Procedures [CDRL IT-02] for each ESPDS Delivery to perform the activities identified in the ESPDS Integration and Test Plan and verify that each ESPDS Delivery meets all requirements of the Work Assignment requirements, the ESPDS Requirement Specifications, Interface Requirements Documents, and Interface Control Documents, and satisfies operations objectives.

The contractor **shall** ensure that operational maximum data volumes and complexity are part of the test configuration when verifying mission-specific functional and performance requirements.

The contractor **shall** notify designated Government representatives of verification events no fewer than ten (10) business days prior to the event, in order to allow the representatives to be present.

The contractor **shall** conduct a Test Readiness Review (TRR) prior to any major verification activity or interface test, to demonstrate that all participants, subsystems, test equipment, test data, and other resources are ready and able to conduct and assess a verification event.

The contractor **shall** prepare and present a TRR data package for each TRR [CDRL RE-01].

The contractor **shall** verify the capabilities of existing resources and procured hardware and software prior to use in integration, testing, and operations.

The contractor **shall** provide any additional hardware and software necessary to accomplish ESPDS Delivery installation, integration and testing.

The contractor **shall** ensure that equipment used for tests are in current calibration and so noted by tags or stickers.

The contractor **shall** incorporate Government-provided test data in their verification activities, as directed and available.

The contractor **shall** provide any test data necessary for ESPDS Delivery and Work Assignment verification efforts when such data are not provided by the Government.

The contractor **shall** perform and document all analyses of data that result from ESPDS Delivery verification activities and interface testing, to determine if the ESPDS Delivery meets its requirements specifications and objectives [CDRL IT-03].

The contractor **shall** define, document, execute, and evaluate regression tests for all modifications to installed Deliveries.

The contractor **shall** implement corrective actions whenever ESPDS or Work Assignment requirements are not satisfied.

If site testing determines that a requirement verified previously is impacted by a subsequent delivery, the contractor **shall** change the verification status of that requirement to reflect the current status.

The contractor **shall** capture and retain verification items and results necessary to analyze or justify requirements verification status, until the end of the period of performance or as directed by the Government.

The contractor **shall** support the Government's integration, test, and verification at the Enterprise level.

During on-site integration and testing, the contractor **shall** conduct daily on-site coordination meetings and teleconferences with Government representatives.

5.2.1 Interface Testing

The contractor **shall** work with STAR, the NPOESS and GOES-R Ground Segment vendors, and the ESPDS O&M contractor prior to and following ESPDS Delivery delivery, through the Government Project Office, to identify, plan, perform, and evaluate interface compatibility testing and results.

The contractor **shall** record verification data, conduct post-test analysis, and submit Post-Test Data Packages [CDRL IT-04], which document the as-run procedures, test results, requirements verification status, and anomalies found.

5.2.2 Factory Integration and Test

The contractor **shall** integrate and test ESPDS functions and interfaces at the factory prior to delivery, installation, and official verification at the operational site, including regression testing with the previously-shipped capability. Government representatives will monitor this testing.

The contractor **shall** integrate and test ESPDS functions and interfaces at the operational site, including regression testing with the previously-shipped capability, when directed by the Government. This includes factory remote access to the operational site. Government representatives will monitor this testing.

The contractor **shall** submit TRR Packages [CDRL RE-01] for formal factory tests.

The contractor **shall** conduct pre-shipment factory tests using a test environment that is, with respect to function, configuration, and complexity, representative of the operational environment, to support determination of readiness for site installation.

The contractor **shall** prepare and conduct Pre-Ship Reviews (PSR) to demonstrate that ESPDS builds have completed the required level of factory functional and performance verification to ensure ESPDS and Work Assignment requirements are being met, and have sufficient technical maturity to authorize shipment to the operational site for the next level of integration and test.

The contractor **shall** submit ESPDS Delivery Performance Verification Reports [CDRL SE-09] to summarize the activities and results of factory verification.

5.2.3 Site Integration and Testing

The contractor **shall** submit a PSR Package [CDRL RE-02] for each ESPDS Delivery PSR.

The contractor **shall** submit TRR Packages [CDRL RE-01] for each formal site test.

The contractor **shall** perform all site testing in a manner that does not interfere with operational systems collocated at the site.

The contractor **shall** plan and conduct all testing necessary to verify that each ESPDS Delivery, as installed at the operational site and connected to operational interfaces, meets the ESPDS and associated Work Application functional, performance, and interface requirements.

The contractor **shall** provide on-site technical assistance for testing ESPDS Deliveries with the NPOESS and GOES-R ground segments and the ESPC.

5.2.4 Operations Readiness Testing

The contractor **shall** conduct ESPDS Delivery Readiness testing on the to-be-delivered Work Application capabilities as installed at the operational facility.

The contractor **shall** conduct regression testing to verify that any installation, maintenance, or upgrade does not impact previously-verified functions and performance.

The contractor **shall** submit ESPDS Delivery Performance Verification Reports [CDRL SE-09] to summarize the activities and results of site verification and delivery readiness testing.

The contractor **shall** prepare and conduct ESPDS Delivery Readiness Reviews to demonstrate the readiness of the ESPDS Delivery/Work Assignment capabilities for delivery to the Government for use in system testing and mission operations.

The contractor **shall** submit ESPDS Delivery Readiness Review Data Packages [CDRL RE-03].

5.3 Modeling and Simulation

The contractor **shall** perform Modeling and Simulation in accordance with a Modeling and Simulation Plan [CDRL SE-10] describing the planned ESPDS model capabilities and their use for prototyping, emulation, and simulations that will be used to support design, concept validation, integration and test, verification, and operations.

The contractor **shall** submit Modeling and Simulation Analysis Reports [CDRL SE-11] documenting the results of the modeling and simulation analysis activities.

The contractor **shall** work with NESDIS STAR, NPOESS and GOES-R Ground Segment vendors, and ESPDS O&M contractor, as directed by the Government, to identify potential interface simulation tools necessary to support ESPC, NPOESS, and GOES-R Ground Segment development and testing activities.

5.4 IT Security

The contractor shall comply with the Federal laws and regulations including, but not limited to, OMB Memoranda and Bulletins; the Federal Information Security Management Act (FISMA) of 2002 (Title III of the E-Government Act of 2002); National Institute of Standards and Technology (NIST) 800 Series Publications; and, NIST Federal Information Processing Standards.

The contractor **shall** apply Information Technology (IT) security requirements for all phases of implementation of the design in accordance with the laws, statutes, and regulations on the NOAA IT security web page, <https://www.csp.noaa.gov/policies/index.html>, in the NOAA IT Security Manual, and in the US Department of Commerce (DOC) IT Security Program Policy

The contractor **shall** conform to all applicable policies, standards and procedures described in the DOC System Development Lifecycle requirements.

The contractor **shall** conform to all relevant ESPC policies and practices.

The contractor **shall** comply with DOC Enterprise Architecture requirements. In addition, the contractor must comply with all rules, regulations, policies, procedures, schedules, etc., associated with the management and operations of the System.

The contractor **shall** develop a System Security Plan [CDRL IS-01].

The contractor **shall** identify all ESPDS security controls per NIST SP 800-53, in accordance with FIPS Publication 200, supplemented with justifications for tailoring or use of compensating controls.

The contractor **shall** treat the ESPC as a “high-impact” resource for security standard purposes as outlined in Federal Information Processing Standards (FIPS) Publication (PUB) 199 and FIPS PUB 200.

The contractor **shall** ensure that all developments operates correctly as intended on systems using National Checklist Program Common Configurations such as the Federal Desktop Core Configuration.

The contractor **shall** ensure the developments implement common security configurations using the following order of precedence: NOAA, DOC, NIST, Defense Information System Agency (DISA), or Center for Internet Security (CIS)

The contractor **shall** ensure that all designs enforce the principle of “least privilege” so that authenticated users are limited to accessing only those system objects required for the normal performance of their duties.

The contractor **shall** ensure that developments include anti-malware and Host-based Intrusion Prevention System (HIPS) functions within the development, integration and test, and operations environments.

The contractor **shall** ensure the target ESPC architecture and design has an adequate and cost-effective approach to security requirements.

The contractor **shall** ensure that security testing includes the contractor-developed and procured end items.

The contractor **shall** conduct and document an E-Authentication Threshold Analysis and an E-Authentication Risk Assessment [CDRL IS-02], in accordance with OMB M-04-04 *E-Authentication Guidance for Federal Agencies* and NIST SP 800-63, *Electronic Authentication Guideline*, in order to determine the proper authentication Assurance Level to be implemented for the ‘evolved’ ESPC to prevent unauthorized access and modification of NOAA sensitive or critical information.

The contractor **shall** provide Privacy Threshold Analysis and Privacy Impact Assessments as needed [CDRL IS-03].

The contractor **shall** conduct the ESPDS E-Authentication Risk Assessment using the DOC E-Authentication Risk Assessment Template and the ESPDS E-Authentication Threshold Analysis using the DOC E-Authentication Threshold Analysis Template.

The contractor **shall** submit inputs to the ESPC Certification and Accreditation package that include the ESPDS contractor-developed and procured end items [CDRL IS-04].

The contractor **shall** coordinate all security related incidents with the NOAA Computer Incident Response Team (N-CIRT).

6.

DEVELOPMENT AND IMPLEMENTATION

The contractor **shall** design, develop, and deliver ESPDS Deliveries in accordance with Work Assignment Requirement Specifications, ESPDS Requirement Specifications, Interface Requirements Specifications, and Interface Requirements Documents.

The contractor **shall** perform ESPDS development activities in contractor facilities unless otherwise directed or approved by the Government.

The contractor **shall** ensure that all technology used in the design and implementation of ESPDS Deliveries meet a Technology Readiness Level of six (6) (as defined in the Technology Readiness Assessment Deskbook, May 2005, developed by the DoD) at the time of the Delivery Preliminary Design Review.

The contractor **shall** provide Delivery Allocation Reports (DARs) for each Delivery, containing scope, capabilities delivered, and applicable requirements for each designated Delivery [CDRL DEV-###]

The contractor **shall** prepare and deliver the ESPDS Delivery Design Descriptions [CDRL SE-12] and Database Design Descriptions [CDRL SE-13].

The contractor **shall** submit layouts and engineering drawings, and changes to them, to serve as the basis for technical discussions, evaluations, operations, and maintenance [CDRL SE-14].

6.1 Reviews

The contractor **shall** implement a program of periodic tabletop software peer reviews and engineering peer reviews throughout each ESPDS Delivery development life cycle, using technical expert review team members of whom a majority are external to the specific Work Assignment effort, to identify and address risks, problems, and issues as they arise prior to system-level reviews. Reviews will be organized by the major ESPC components: Ingest, Product Generation, Product Distribution, and Infrastructure Support.

The contractor **shall** allow Government representative participation in all contractor peer reviews.

The contractor **shall** prepare and conduct requirements and design reviews for each ESPDS Delivery. The Government will chair all requirements and design reviews.

The reviews **shall** cover all aspects of ESPDS Delivery hardware, software, design, analyses, validation, integration, testing, verification, installation, transition, and operations support for which the contractor has responsibility.

The contractor **shall** provide the Government with at least twenty (20) working days advance notification so that Government representatives can be present at all requirements and design reviews.

The contractor **shall** provide the Government with at least thirty (30) working days advance notification on all requirements and design reviews schedule changes.

The contractor **shall** accommodate attendance by Government representatives at requirements and design reviews.

The contractor **shall** conduct a dry run of each requirements and design review, with the Government representatives in attendance, approximately two (2) weeks prior to the formal review.

The contractor **shall** plan dry runs to be the same duration as the formal review.

The contractor **shall** provide the Government with a review data package as specified in the CDRL data item for that review.

The contractor **shall** provide responses within 30 days to Requests for Action (RFAs) generated during the reviews.

The contractor **shall**, after each review, document all RFAs in the ESPDS action item database within one (1) week.

Each requirements and design review will be considered complete when approved by the Government.

If the Government determines that delta reviews are required, the contractor **shall** conduct such reviews at a time mutually agreed upon by the Government and the contractor.

System Requirements Reviews (SRRs)

The contractor **shall** prepare and conduct a SRR for each ESPDS Delivery to review all ESPDS and Work Assignment-related requirements.

The contractor **shall** submit a SRR Data Package [CDRL RE-04] for each SRR.

The contractor **shall** plan for a two-day review for each SRR.

System Definition Reviews (SDRs)

The contractor **shall** prepare and conduct a SDR at the conclusion of each ESPDS Delivery requirements definition and allocation and concept definition activity.

The contractor **shall** submit a SDR Data Package [CDRL RE-05] for each SDR.

The contractor **shall** plan for a two-day review for each SDR.

Preliminary Design Reviews (PDRs)

The contractor **shall** prepare and conduct a PDR at the conclusion of each ESPDS Delivery preliminary design activity.

The contractor **shall** submit a PDR Data Package [CDRL RE-06] for each PDR.

The contractor **shall** plan for a three-day review for each PDR.

Critical Design Reviews (CDRs)

The contractor **shall** prepare and conduct a CDR at the conclusion of each ESPDS Delivery detailed design activity.

The contractor **shall** submit CDR Data Package [CDRL RE-07] for each CDR.

The contractor **shall** plan for a three-day review for each CDR.

6.2 Hardware Design and Implementation

The contractor **shall** use COTS hardware unless the contractor can demonstrate that the lifecycle cost, risk, and technical factors supporting a non-COTS solution are in the best interest of the Government.

The contractor **shall** provide a design report when any modifications are proposed to COTS products/components [CDRL HW-01].

The contractor **shall** verify that units and modules are manufactured, processed, screened, and qualified, at a minimum, to good commercial practice in accordance with UL-60950-1 Information Technology Equipment, Safety Part 1-General Requirements.

The contractor **shall** provide and deliver all items necessary to ensure proper operation of all ESPDS hardware provided.

The Contractor **shall** document and implement handling procedures, including shipping, receiving and storage, to prevent equipment and material degradation.

The contractor **shall** document and implement an Electrostatic Discharge Control Program in accordance with ANSI/ESD S20.20.

The contractor **shall** document the hardware installation approach, activities, milestones, and resource requirements [CDRL HW-02].

The contractor **shall** identify all Configuration Items (Cis) in the Configuration Item Identification List [CDRL CM-06].

6.3 Software Design and Implementation

The contractor **shall** develop, integrate, deliver, install, and test software in accordance with the ESPDS Software Management and Development Plan [CDRL SW-01].

The contractor **shall** identify all Computer Software Configuration Items (CSCIs) in the Configuration Item Identification List [CDRL CM-06].

The contractor **shall** ensure that all delivered software maintenance and user documentation complies with the NOAA/NESDIS Software Development, Maintenance, User Documentation S.24-806, Sections 2.0 and 3.0; and the SPSRB documentation standards.

The contractor **shall** design the ESPDS software such that the addition of new applications does not require a software recompile nor system restart.

The contractor **shall** use COTS software unless the contractor can demonstrate that the lifecycle cost, risk, and technical factors supporting a non-COTS solution are in the best interest of the Government.

The contractor **shall** provide a design report when any modifications are proposed to COTS software. [CDRL SW-02]

The contractor **shall** conduct a software test readiness review prior to the formal verification of any software.

The contractor **shall** conduct a software qualification review for each version of software prior to formal release, including review of the results of testing and software verification.

The contractor **shall** develop a Software Delivery Package [CDRL SW-03] for each formal release of ESPDS Delivery software.

The contractor **shall** deliver all developed source and executable code to the Government as part of the Software Delivery Package [CDRL SW-03].

The contractor **shall** transfer to the Government all rights to delivered software through an assignment, or license the rights to the Government.

The contractor **shall** develop Software Version Description(s) [CDRL SW-04] to support the release, tracking, and control of software versions.

The contractor **shall** develop ESPDS Software Design Document(s) [CDRL SW-05] to describe ESPDS software design, architecture, structure, and processing.

The contractor **shall** provide all items necessary to ensure proper operation of all ESPDS software.

7.

MISSION ASSURANCE

7.1 Quality Assurance

The contractor **shall** prepare, submit, and implement a Mission Assurance Implementation Plan [CDRL MA-01].

The contractor **shall** have a Quality Management System that is compliant with the minimum requirements of ANSI/ISO/ASQC Q9001 Rev 2008.

The work activities and documentation performed by the contractor and sub-tier contractors or suppliers **shall** be subject to evaluation, review, audit, and inspection by designated representatives from NOAA, the Government Inspection Agency, or an Independent Assurance Contractor. The Government will delegate in-plant responsibilities and authority to those agencies via a letter of delegation and task assignment.

The contractor **shall** grant access for Government representatives to conduct Quality Assurance assessments and surveys upon notice.

The contractor **shall** provide resources to assist with the assessments/surveys with minimal disruption to work activities.

The contractor, upon request, **shall** provide Government representatives with documents, records, and equipment required to perform their assurance and safety activities.

Contractor personnel responsible for ESPDS assurance activities **shall** have direct access to contractor management, independent of ESPDS project management, with the functional freedom and authority to interact with other elements of their project.

The contractor **shall** implement software quality assurance standards and processes, including analysis and measurement of observed software anomalies to identify and address possible software reliability issues, and describe the processes and standards in the ESPDS Software Management and Development Plan [CDRL SW-01].

The contractor **shall** document, monitor, analyze, and track software metrics during each development build.

The contractor **shall** include in the software metrics the collection and classification of software defects.

The contractor **shall** perform trend analysis on software defects and make the analysis results available for lessons learned and root cause analysis.

7.2 Reliability, Maintainability, and Availability

The contractor **shall** submit ESPDS Delivery Reliability, Maintainability, and Availability (RMA) Predictions Reports [CDRL MA-02] and update the RMA predictions to cover changes in ESPDS delivered configurations, hardware, and software.

The contractor **shall** perform numerical RMA predictions to validate that each ESPDS Delivery design meets RMA requirements and to support the following activities:

- a) Evaluation of alternative design concepts, redundancy, and failover approaches

- b) Identification of design elements that are the greatest detractors of ESPDS availability
- c) Identification of potential mission-limiting elements and components that will require special attention in parts selection, testing, and operations
- d) Evaluation of the impact to ESPDS availability of proposed engineering changes and waiver requests

The contractor **shall** perform RMA evaluations via the collection of failure and time data throughout the development lifecycle

The contractor **shall** analyze and report the following availability metrics in the ESPDS RMA analyses; inherent availability, achieved availability, and operational availability.

The contractor **shall** report the results of RMA assessments and predictions for each ESPDS Delivery, particularly those impacting design or risk management decisions, at risk meetings, Preliminary Design Reviews, and Critical Design Reviews.

The contractor **shall** verify that all preventive and corrective maintenance activities, such as system- and data-level backups, can be executed successfully.

The contractor **shall** assure that fault tolerance and redundancy have been correctly specified, implemented, and verified.

The contractor **shall** use the following sources of failure rates for the reliability predictions:

- a) Performance of similar items
- b) Test data
- c) MIL-HDBK-217F – Reliability Prediction of Electronic Equipment with updated failure rates (e.g., “Handbook of 217 Plus”, “MIL-HDBK-472”) from the Reliability Information Analysis Center, or equivalent.

7.3 Anomaly Reporting and Resolution

The contractor **shall** deliver with each ESPDS Delivery all diagnostic and fault isolation tools and procedures that are used for anomaly detection, isolation, and evaluation.

The contractor **shall** capture, identify, and store information and artifacts associated with any observed anomaly, to support identification, evaluation, resolution, and documentation.

The contractor **shall** ensure, when practicable, that anomaly information and artifacts can be retrieved and used for anomaly recreation, analysis, reporting, and resolution verification.

The contractor **shall** report any anomalies found during development, integration, installation, and verification for each ESPDS Delivery.

The contractor **shall** resolve any anomalies found during development, integration, installation, and verification for each ESPDS Delivery.

The contractor **shall** either use the Request for Action Tracking System (RATS) to capture, track, report status, and document resolution of Work Assignment anomalies, non-conformances, and test failures, or transition this data from their internal system to RATS on a monthly basis.

Once the Configuration Management and Anomaly Reporting and Tracking (CMART) system is made available (estimated to be 2012 at the earliest), the contractor **shall** use CMART instead of RATS. The Government will authorize and provide access to RATS and CMART.

The contractor **shall** support the transfer of the RATS database to CMART.

The contractor process for anomaly reporting **shall** support submission of ESPDS Delivery anomalies, Severity 1-5, within 24 hours of anomaly detection, where Severity levels are defined as:

- a) 1- Critical – Potential Loss of Product; High Priority
- b) 2- Urgent – Potential Loss of Product but workaround is in place; High Priority
- c) 3- Routine – Fix when schedule permits; Moderate Priority
- d) 4 – Minor – Minor Problem
- e) 5 – Enhancement – Minor Enhancement (no CCR required); Moderate Priority.

For each reported ESPDS nonconformance, the contractor **shall** conduct an investigation and engineering analysis sufficient to determine cause and corrective actions and receive Government authorization to disposition the nonconforming product.

For anomaly closure, the contractor **shall** include documented objective evidence of the verification of effective corrective action.

The contractor **shall** resolve all Severity 1 and 2 anomalies identified and assigned to the contractor before each ESPDS Delivery Readiness Review.

8.

TRANSITION TO OPERATIONS

8.1 Site Preparation & Installation

The contractor **shall** perform ESPDS Delivery hardware and software installation and checkout at the operational site(s), including ensuring site readiness prior to delivery, delivery to the site(s), support for facility connections, and complete preparation for site integration and testing.

The contractor **shall** provide to, and coordinate with, the Government all ESPDS Delivery facility and infrastructure plans and schedules.

The contractor **shall** coordinate and receive Government approval for activities at any Government site in advance of need dates.

The contractor **shall** document the hardware installation approach, activities, milestones, and resource requirements [CDRL HW-02].

The contractor **shall** provide all installation checklists, procedures, and tools.

The contractor **shall** perform all installation and checkout in a manner that does not interfere with operational systems collocated at the site.

8.2 Transition Support

The contractor **shall** develop and deliver Operations Handbooks [CDRL TO-01] for each of the ESPC Major Architectural Components.

The contractor **shall** develop and deliver Operations and Maintenance Manuals [CDRL TO-02] for each of the ESPC Major Architectural Components.

The contractor **shall** develop and deliver Software User Manuals [CDRL SW-06] for each of the ESPC Major Architectural Components.

The contractor **shall** develop and deliver Computer Operator Manuals [CDRL TO-03] for each of the ESPC Major Architectural Components.

The contractor **shall** develop and deliver Computer Programming Manuals [CDRL TO-04] for each of the ESPC Major Architectural Components.

The contractor **shall** provide information and graphics highlighting the capabilities and interfaces of ESPC Major Architectural Components, for Government use in Help Desk activities [CDRL TO-02].

The contractor **shall** provide users' guides as part of user training [CDRL TO-05].

The contractor **shall** update handbooks, manuals, and user guides when impacted by an ESPDS Delivery.

8.3 Training

The contractor **shall** provide on-site training for Government-designated personnel who will perform ESPDS Delivery validation, operations, and help desk services, to be documented in the ESPDS Training Plan [CDRL TO-06].

The contractor **shall** develop and provide training classes based on the NESDIS Standard No. S24.804, General Requirements for Training on Electronics Equipment.

The contractor **shall** provide on-site training for Government-designated personnel who will take on responsibility for ESPDS Delivery hardware and software/firmware maintenance.

The contractor **shall** provide training and Training Documentation [CDRL TO-7] that cover all aspects of the ESPDS Deliveries, including normal and contingency operations, hardware configuration and maintenance, software/firmware configuration and maintenance, interfaces, infrastructure, configuration management, and procedures.

The contractor **shall** support updates to the ESPDS training and materials to reflect any changes to the ESPDS, its interfaces, or its processes.

9.

GLOSSARY & ACRONYMS

ARB	Anomaly Review Board
C&A	certification and accreditation
CCB	Configuration Control Board
CCR	configuration change request
CEMSCS	Central Environmental Satellite Computer System
CDR	Critical Design Review
CDRL	Contract Data Requirements List
CMART	Configuration Management and Anomaly Reporting and Tracking System
CMMI	Capability Maturity Model Integration
CIP	Critical Infrastructure Protection
COR	Contracting Officer's Technical Representative
COTS	commercial off-the-shelf
DOC	Department of Commerce
DoD	Department of Defense
DOORS	Dynamic Object-Oriented Requirements System ®
EAR	Export Administration Regulations
ESPC	Environmental Satellite Processing Center
ESPDS	Environmental Satellite Processing and Distribution System
EVMS	Earned Value Management System
GOES	Geostationary Operational Environmental Satellite
GOES-R	GOES R-Series
IBR	Integrated Baseline Review
IMP	Integrated Master Plan
IMS	Integrated Master Schedule
IPT	Integrated Project Team
IT	information technology
ITAR	International Traffic in Arms Regulations
NASA	National Aeronautics and Space Administration

N-CIRT	NOAA Computer Incident Response Team
NESDIS	National Environmental Satellite, Data, and Information Service
NOAA	National Oceanic and Atmospheric Administration
NPOESS	National Polar-orbiting Operational Environmental Satellite System
NPP	NPOESS Preparatory Project
NSOF	NOAA Satellite Operations Facility
OSD	Office of Systems Development
OSDPD	Office of Satellite Data Processing and Distribution
OSO	Office of Satellite Operations
PDR	Preliminary Design Review
PMSR	Project Management Status Review
POES	Polar-orbiting Operational Environmental Satellites
PSR	Pre-Ship Review
RATS	Request for Action Tracking System
RFA	request for action
RMA	reliability, maintainability, and availability
SATEPS	Satellite Environmental Processing System
SDR	System Definition Review
SEI	Software Engineering Institute
SOW	Statement of Work
SRR	System Requirements Review
STAR	Center for Satellite Applications and Research
TBD	to be determined
TIM	technical interchange meeting
TRR	Test Readiness Review